



Existing Structures – Structure Rehabilitation – Deck Overlays – Polyester Concrete Overlays and Expansion Dams

Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	04-29-2022	Original Issue	Richard Foley

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Background

This process establishes Structure Construction (SC) responsibilities and procedures for review and authorization of submittals, quality assurance, materials, construction, and payment of polyester concrete overlays and expansion dams.

Polyester concrete is used by Caltrans to provide a wearing surface and prevent intrusion of salts and other chemicals into concrete bridge decks, thus extending the service life of bridge decks. Also, polyester concrete can be used to repair concrete decks by removing unsound concrete and replace it with polyester concrete. Additionally, polyester concrete may be used to correct surface profile or cross section of structures to provide improved drivability, drainage and/or bridge deck configuration.

Additional unique requirements for Polyester Concrete Overlays and Expansion Dams are detailed in BCM 60-3.03B, *Existing Structures – Methacrylate Resin Bridge Deck Treatment*.

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review the [Contract Specifications](#), 60-3.04B-C, Existing Structures – Structure Rehabilitation – Deck Overlays – Polyester Concrete Overlays and Expansion Dams, that this BCM is

based on as identified in the title block above. The information in the contract specifications typically will not be repeated in the text of this BCM.

Process Inputs

1. Submittals per contract documents

Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Inspection of field work for this process is:
 - a. [Continuous](#) during placement of polyester concrete overlay.
3. Before construction begins:
 - a. Review the following:
 - i. [Contract documents](#)
 - ii. [Attachment 1](#), *Polyester Concrete Overlay & Expansion Dams*
 - iii. *Concrete Technology Manual (CTM)*, [Chapter 6](#), *Structure Concrete Repair and Rehabilitation – Bridge Deck Rehabilitation – Methacrylate Overlays*
 - iv. Authorized Traffic Management Plan
 - v. Authorized Lead Compliance Plan
 - b. Review and authorize the following:
 - i. Work plan for placement of polyester concrete overlay
 - ii. Public Safety Plan
 - c. Forward [Form CEM 3101](#), *Notice of Materials to be Used*, to Materials Engineering and Testing Services (METS).
 - d. Verify the material was tested and released by METS:
 - i. Call METS Translab to verify the lot number on the COC.
 - ii. If necessary (when material storage condition is of concern), collect a sample for additional testing and send to Translab with Form TL-0101, *Sample Identification Card*.
 - e. Verify that SC staff have been medically cleared, trained, and fit tested to use respirators.

- f. Verify that the location to be overlaid meets contract requirements, and [BCM 60-3.02](#), *Existing Structures – Structure Rehabilitation – Bridge Deck Repair and Preparation*.
 - g. Hold a preconstruction meeting with the contractor to discuss the required deck repair area, test area, skid testing, application equipment, safety, abrasive cleaning methods, and the contingency plan if the resin does not cure in time.
 - h. Communicate all authorized submittals with Assistant Structure Representative and Resident Engineer.
 - i. Review the contractor's three week look ahead and discuss with the [METS Representative](#) for upcoming friction tests.
 - j. Review and authorize contingency plan for polyester concrete overlay.
4. During construction:
- a. For the test area, perform the following:
 - i. Verify that the material that arrived at site has been tested by METS.
 - ii. Verify that the [CTM 109](#), *Method of Testing of Material Production Plants*, certification is current.
 - iii. Verify that the concrete surface is cleaned prior to placement of polyester concrete overlay per the contract documents.
 - iv. Prior to placement of the polyester concrete overlay, check that the weather conditions, relative humidity, and deck surface temperature are within the requirements of the contract documents.
 - v. Coordinate lane closures with the Resident Engineer.
 - vi. Track the amount of methacrylate/polyester resin material placed and produce pay quantities.
 - vii. Complete Daily Reports for the work performed.
 - viii. Review production airborne emissions monitoring after completing polyester concrete overlay placement activities.
 - ix. Verify that the completed test area demonstrates compliance with contract requirements, applicable authorized submittals, and the manufacture's recommendations (i.e., application rate, initiator/promotor amount, set time, coefficient of friction, mixing guidance/sequence, equipment, tools, etc.).
 - x. Review and authorize airborne emissions monitoring of the test area (Cal/OSHA GISO [§ 5155](#), *Airborne Contaminants*, regarding Permissible Exposure Limit for Hazardous Substances).

- xi. Arrange for coefficient of friction test, [CTM 342](#), *Method of Test for Surface Skid Resistance with the California Portable Skid Test*, [BCM 51-1.01](#), *Concrete Structures – General*.
 - xii. Review and authorize the treated surface at the test area.
- b. For production work, repeat steps 4.a.i. thru 4.a.xi.
 - c. Prior to opening the overlaid area to traffic verify the following *Contract Specifications*, Section 60-3.04B(3)(c), *Existing Structures – Structure Rehabilitation – Deck Overlays – Polyester Concrete Overlays – Construction – Placing Polyester Concrete*, requirements are met:
 - i. The completed concrete deck surface has a uniform surface texture with a coefficient of friction of at least 0.35 when tested under CTM 342 and the surface smoothness is complying with the *Contract Specifications*, Section 51-1.01D(3)(b)(ii), *Concrete Structures – General – Quality Assurance – Department Acceptance – Test Concrete Surfaces – Surface Smoothness*.
 - ii. The polyester concrete overlay edges are tapered if the overlay is not completed within the allowable lane closure time, or the overlay is more than 1/2-inch higher in elevation than the adjacent pavement.
 - iii. The edges transverse to the direction of traffic are tapered at a 20:1 (horizontal: vertical) slope. Taper the edges that are longitudinal to the direction of traffic at a 4:1 (horizontal: vertical) slope.
- 5. Document all inspection, construction, and quality assurance activities, pertinent to this BCM, in the Daily Reports per [BCM C-7](#), *Daily and Weekly Reports*.
 - 6. Following construction:
 - a. Record any changes to the as-built plans. Refer to [BCM C-6](#), *Required Documents to be Submitted During Construction*, for guidance.
 - 7. File all project documentation (correspondence, materials acceptance documentation, Daily Reports, etc.) in the appropriate category in the project records as specified in the *Construction Manual*, [Section 5-102](#), *Organization of Project Documents*.

Process Outputs

- 1. Authorized submittals
- 2. Materials certification documentation
- 3. Lane Closure coordination
- 4. Methacrylate/Polyester placement quantities

5. Rehabilitated bridge deck
6. Skid test results
7. Daily Reports
8. As-built plans

Attachments

[Attachment 1](#): *Polyester Concrete Overlay & Expansion Dams*